

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

49832
cop. 2

U. S. DEPT. OF AGRICULTURE
NATIONAL INFORMATION LIBRARY

MAR 13 1964

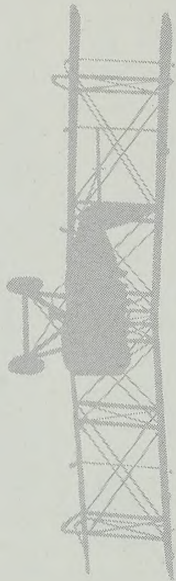
CURRENT SERIAL RECORDS

IF anyone ever thought that agriculture would never get off the ground, he didn't reckon with the airplane and helicopter. Starting more than 40 years ago, agricultural aviation today plays a big role in both farming and forestry. It is now the third largest branch of civil flying in America, and this photo booklet shows many of the reasons why.



BN-17335-X

AIRCRAFT in AGRICULTURE



THE EARLY DAYS

Back in 1919, two men met by accident in a San Francisco restaurant. One, a forester in the U.S. Forest Service, was looking for better ways of protecting timberland from fire. The other, a young Army major, "Hap" Arnold, was to receive later fame as commanding general of the U.S. Air Force. But in 1919, he wanted to find work for good wartime pilots, who were as surplus as the fighter planes they had flown.

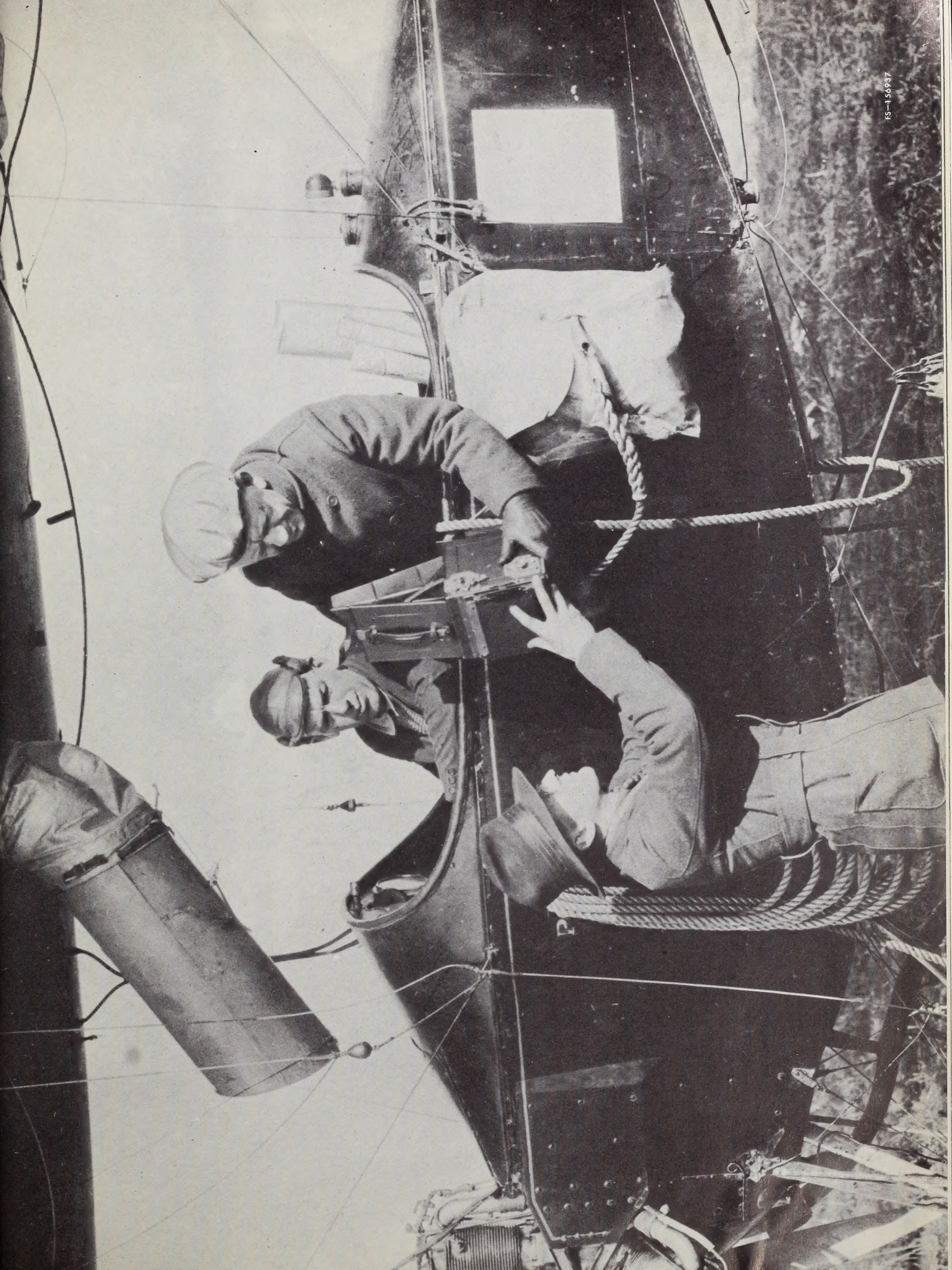
Out of the meeting came the idea of an organized forest-fire patrol over California's Sierra Madre Mountains, an activity that marked the beginning of today's large-scale air-ground operations in forestry.

The first successful use of airplanes in agriculture was in 1921, when the Ohio Agricultural Experiment Station ran tests in insect control from the air. The next year, the Department of Agriculture tried killing cotton boll weevils by aerial dusting. These experiments were also successful.

Thus, by the early twenties, agricultural aviation was already off to a good start.

cover: Setting down right where it's needed, a helicopter delivers hay for hungry livestock on a snowbound farm in North Carolina.

right: In the gondola of a Pony blimp, a crew prepares to ascend for fire patrol over the Angeles National Forest in California. Taking photos from lighter-than-air machines was already old hat when this picture was made over 40 years ago.

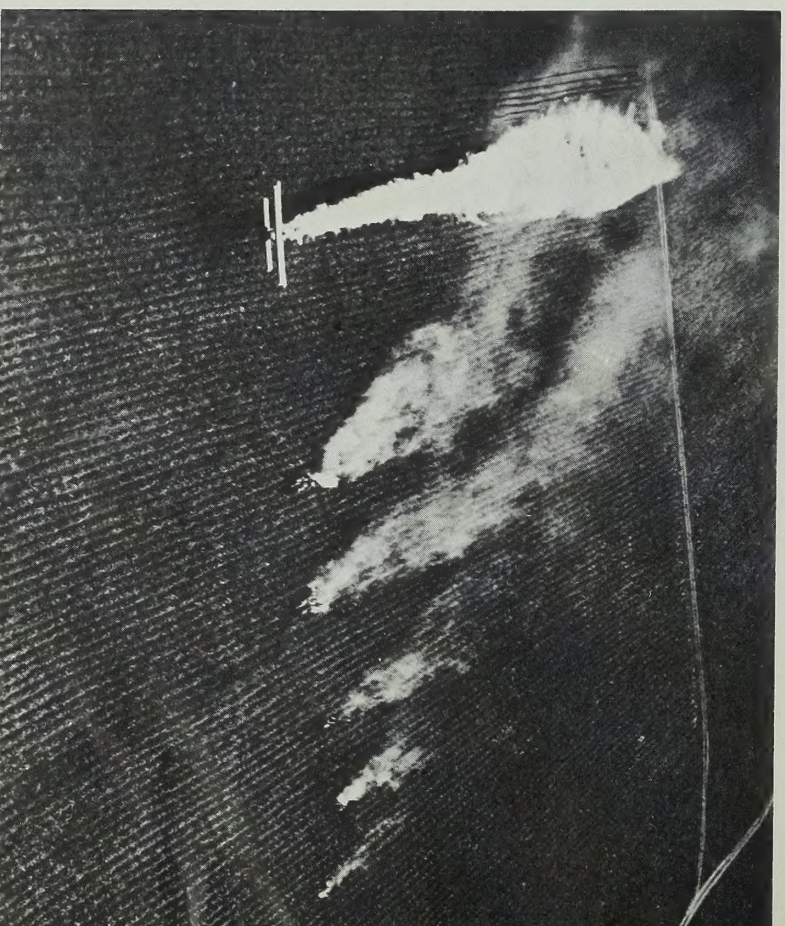




162635

You had to dress warmly when you flew high in an open plane. These pioneer flyers are about to take off on forest patrol in 1921. The plane: a DeHavilland 4. The place: Olympic National Forest, Washington.

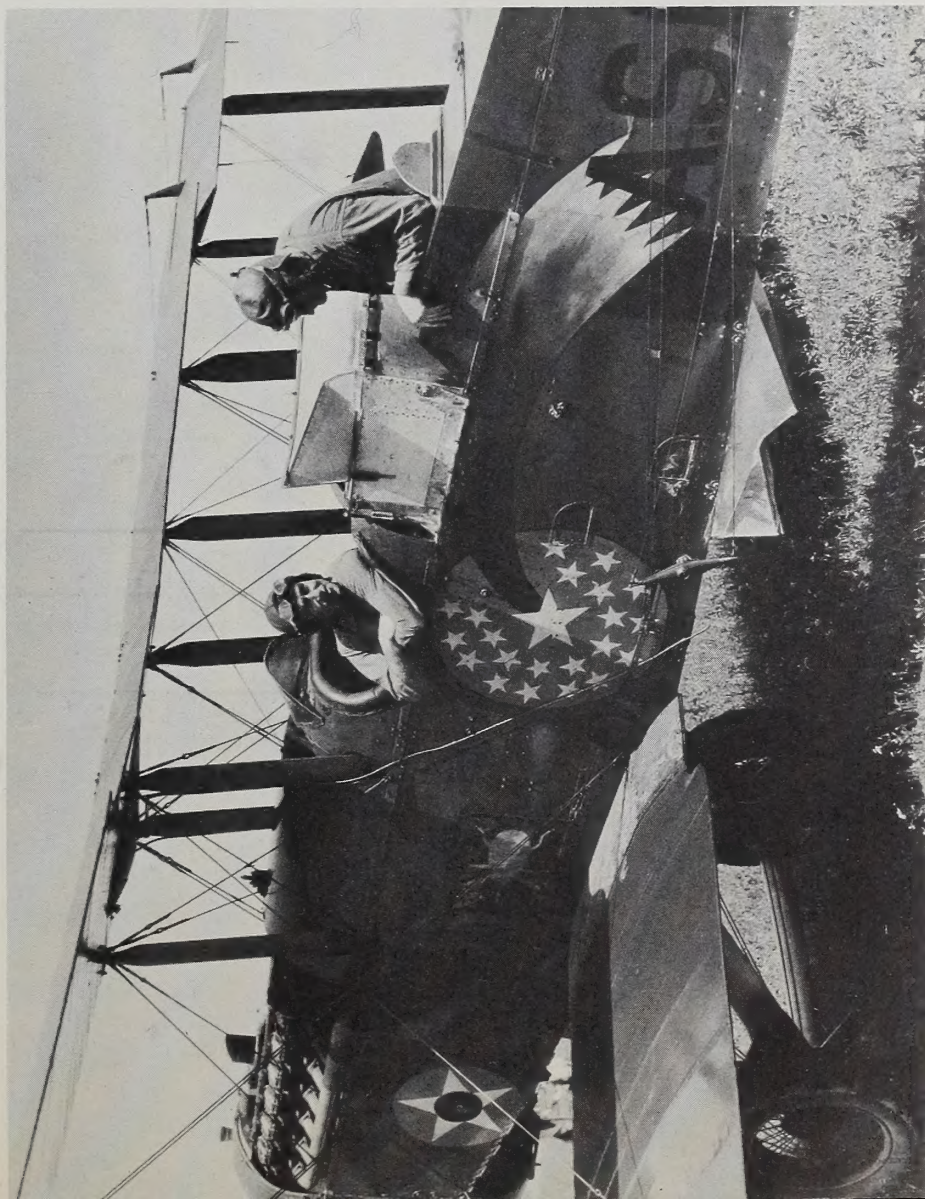
Some 40 years ago, demonstrations such as the one below did much to show the value of aircraft in agriculture. In this photo, taken in 1925, crop-dusting is being done (left to right) by plane, power-driven machine, horse-drawn machine, from horse-back, and by hand.



BN-4452

Although smokejumpers and helicopters were still some years away, by the thirties aircraft had proved their value in forest work, and techniques for ground-air coordination were well advanced. Here, a national forest ranger and pilot map out a flight plan.

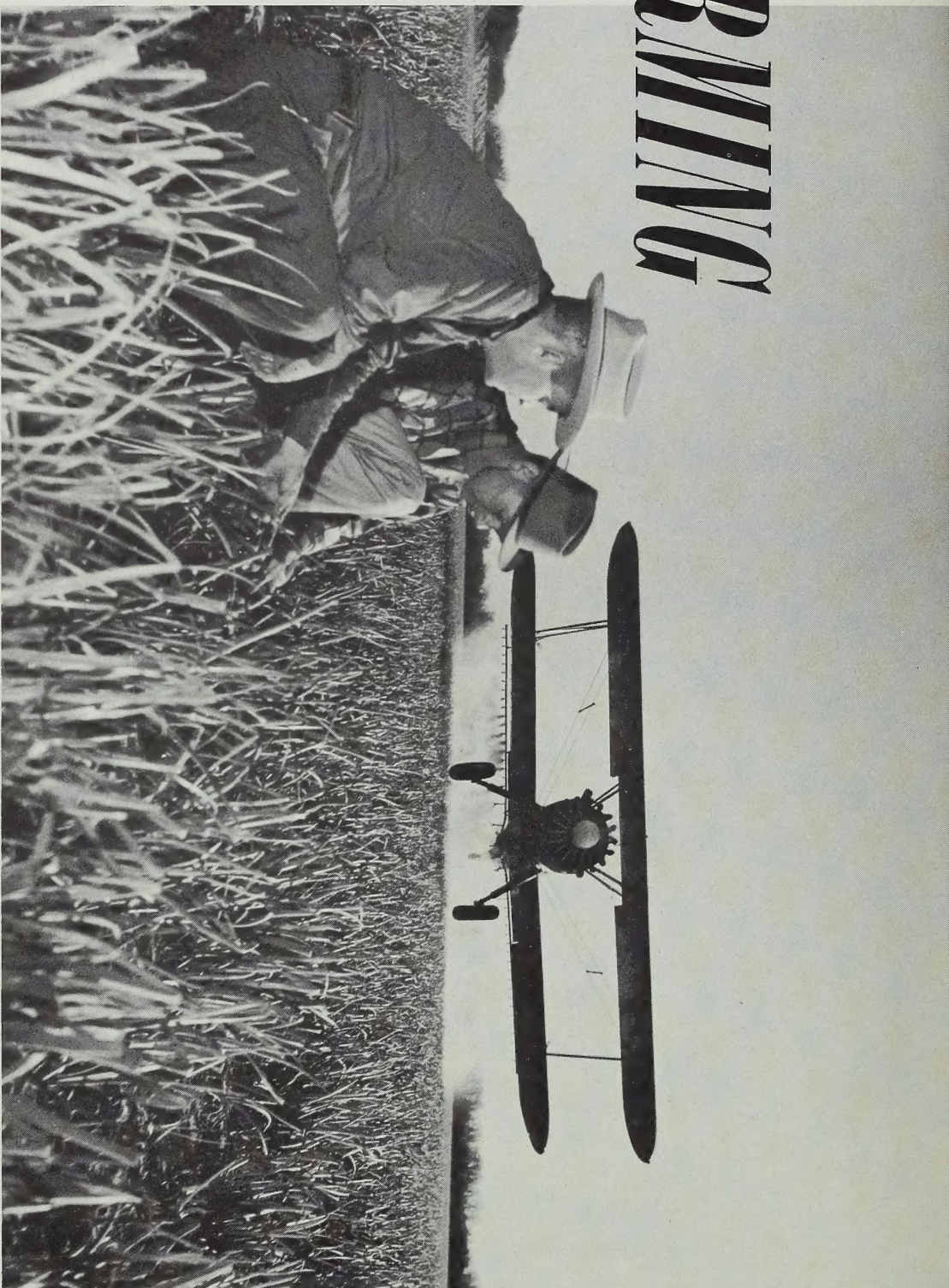
247978



BN-17339-X

DH-4s were also widely used in farm work. This one, powered by a 400 HP Liberty engine, specialized in boll-weevil control in the early twenties. The pilot sat up front. Behind him was the dust hopper, developed at a USDA lab. The man in the rear controlled the flow of insecticide from the bottom of the fuselage by turning a feeder crank on the hopper.

FARMING

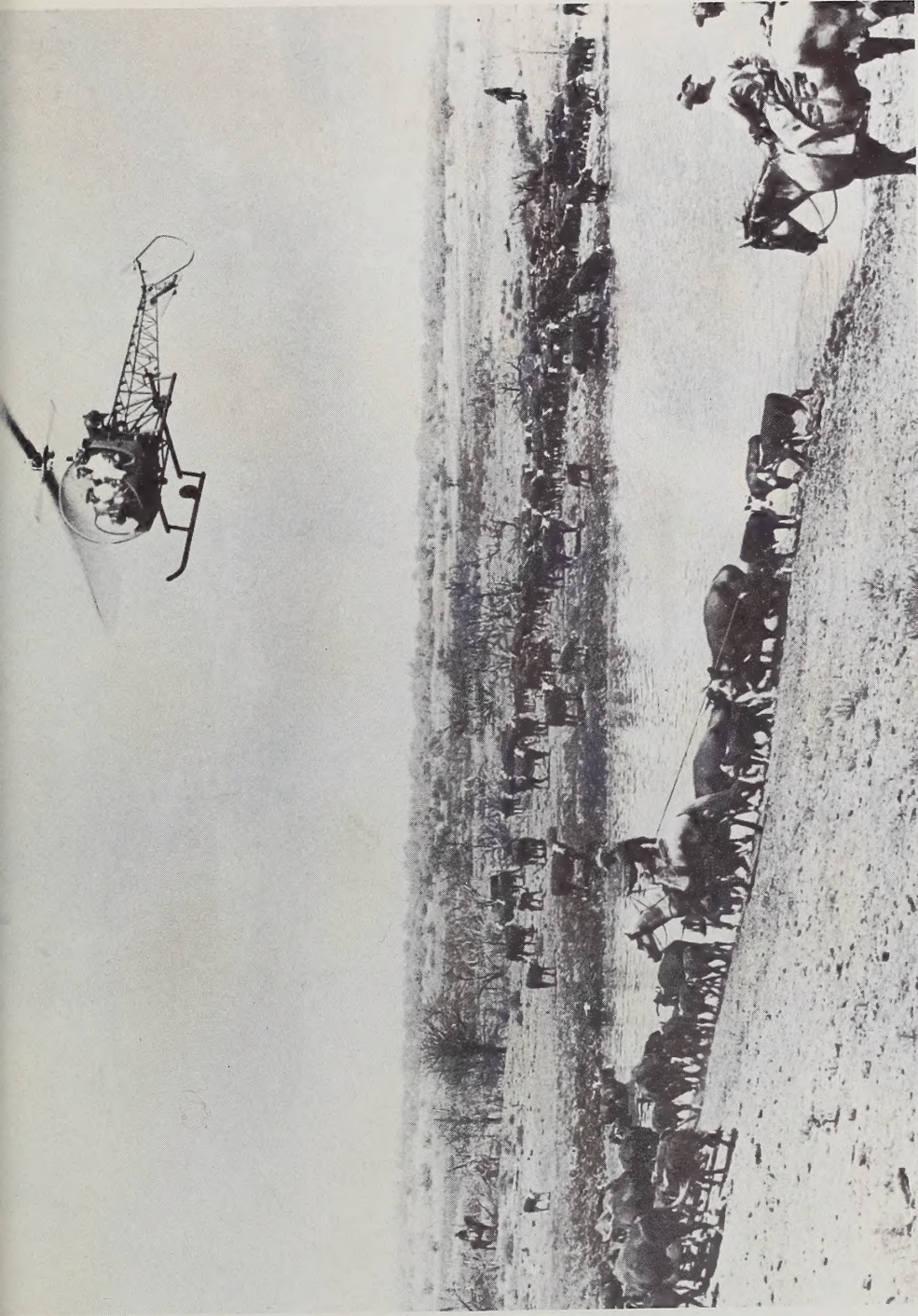


BN-17336-X

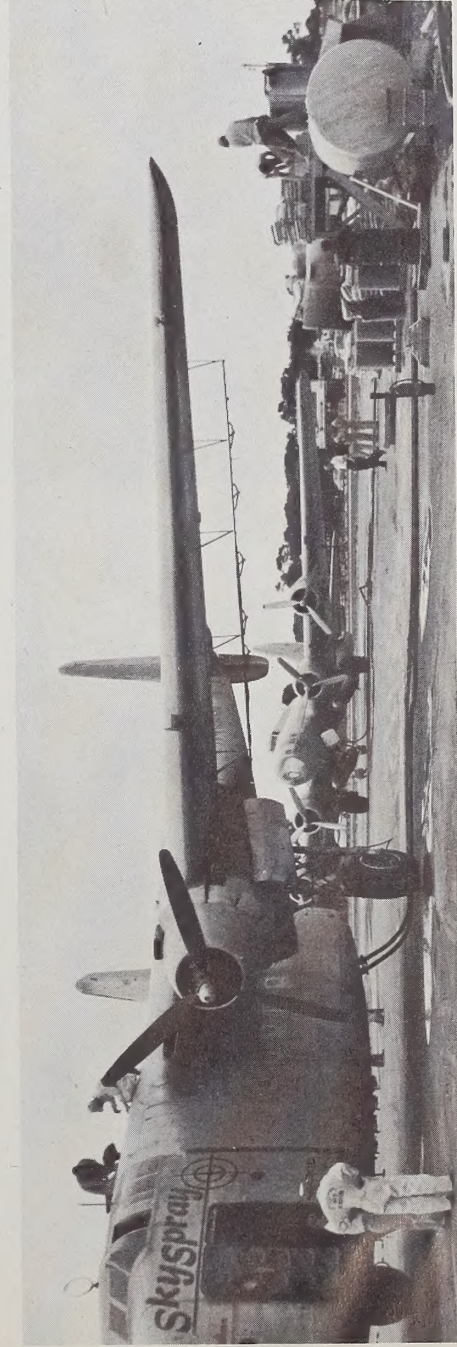
Men and machines on the ground are still the decisive factor, but aircraft have earned a prominent place among modern farm tools. Besides fighting insects and plant diseases, aircraft do many other jobs such as seeding, spreading fertilizer, and lending a hand in ranching.

Originally a trainer in World War II, the Stearman has found widespread use in agriculture. Here, it's about to pull up after a run over a field of onions. In the foreground: a county agent and commercial insecticide specialist.

Ranchers find planes and helicopters handy for many jobs—checking fences, locating strays, hunting coyotes, counting cattle, and even at roundup.

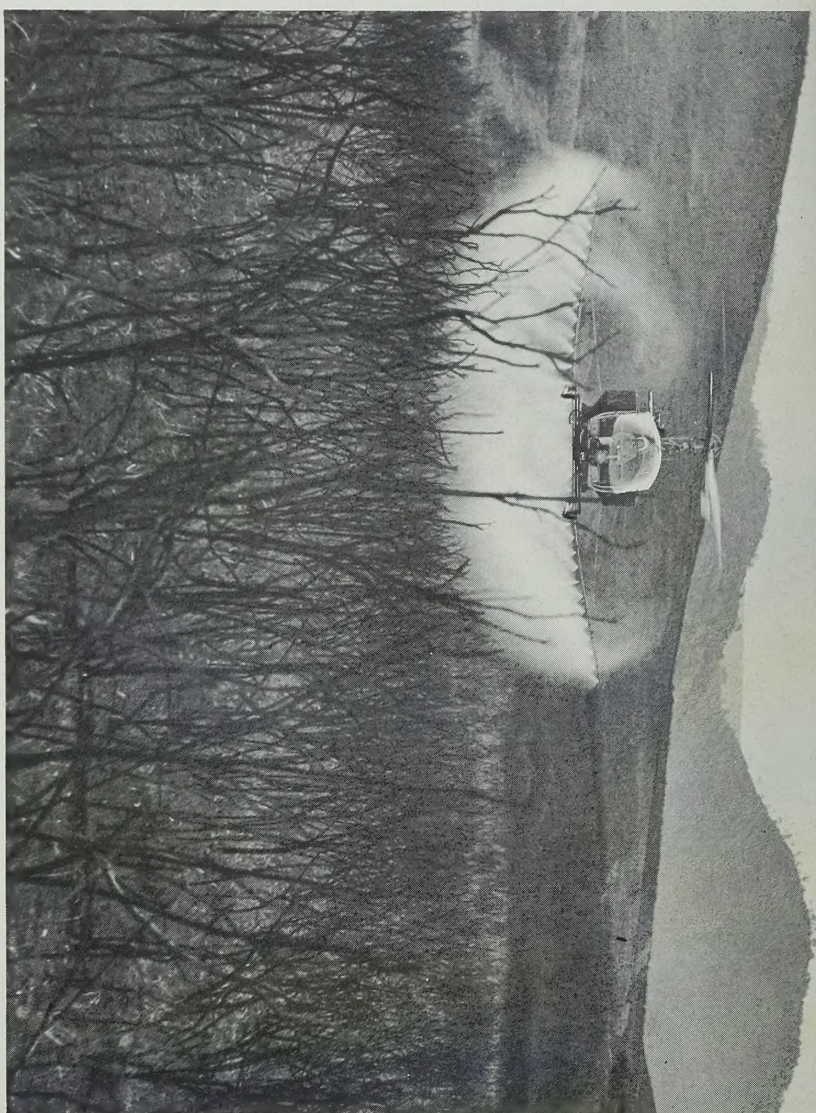


BN-17343-X



N-18512

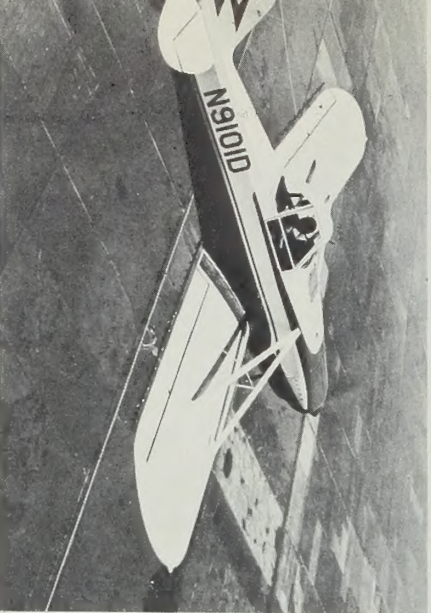
Many planes designed for other purposes have been adapted to farm work. In the foreground, a converted cargo plane is being loaded with spray to combat the highly destructive Mediterranean fruit fly in Florida.



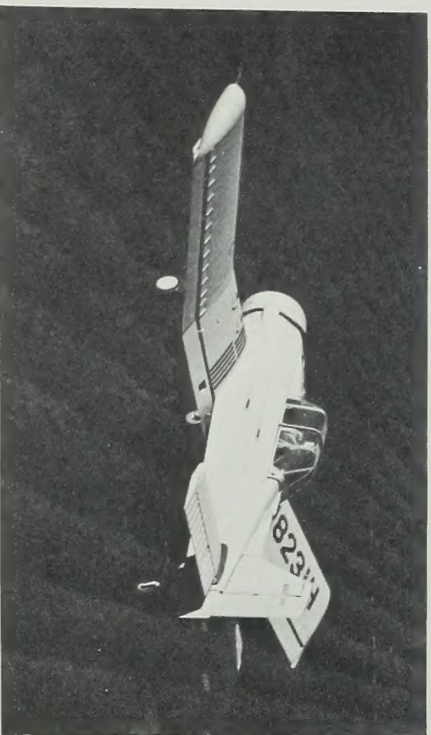
BN-17337-X

Helicopters are becoming more and more familiar in farm operations. As this photo shows, downwash created by the rotors helps to control the penetration of spray material.

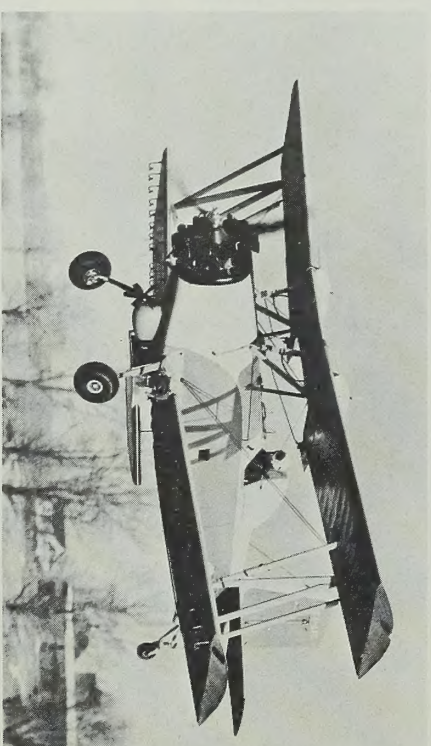
BN-17346-X



BN-17341-X



BN-17344-X



Here are several modern planes especially designed for agricultural work. Their wing design permits heavy loads to be carried safely at slow speeds. Besides safety, low operating costs and maneuverability are other qualities a good ag-plane should have.

The carton of flies visible at right as it falls free of the plane is one of about 1,500 carried on every flight. As of November, 1962, about 70 million sterile screw-worms were being released weekly over 90,000 square miles of infested land.

below: At the new Moore Base, a member of the plane's two-man crew loads cartons of the sterile flies into an automatic releasing device. Currently, the program is using about 15 planes in this country and about 2 that make flights in Mexico.

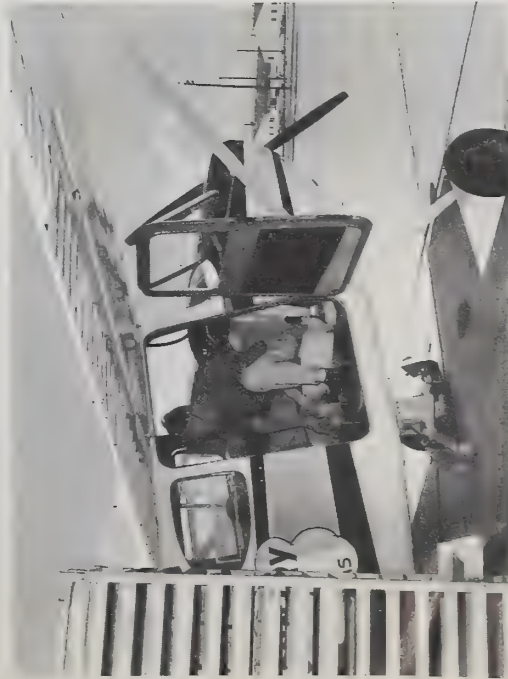
FIGHTING BUGS with BIOLOGY

Aerial war is currently being waged against the screw-worm, an extremely destructive cattle pest. The fight calls for growing male flies in a laboratory, making them sexually sterile by radiation, and then releasing them by the millions from planes. When native females mate with the sterile males, the eggs will not hatch and thus the insect is checked.

The screw-worm program is an outstanding example of highly effective biological control that functions without chemical insecticides.

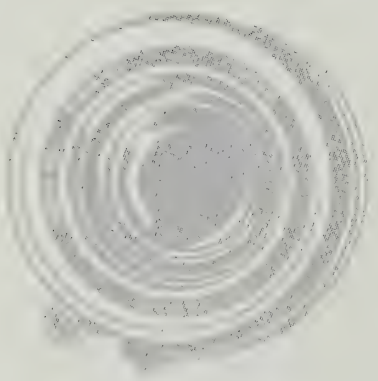
Following the method's great success in the Southeast, the Department of Agriculture now operates a new installation for screw-worm control at Moore Air Force Base near Mission, Texas. Opened in June, 1962, the Eradication Center grows, irradiates, and supervises release of the sterile flies.

N-46633



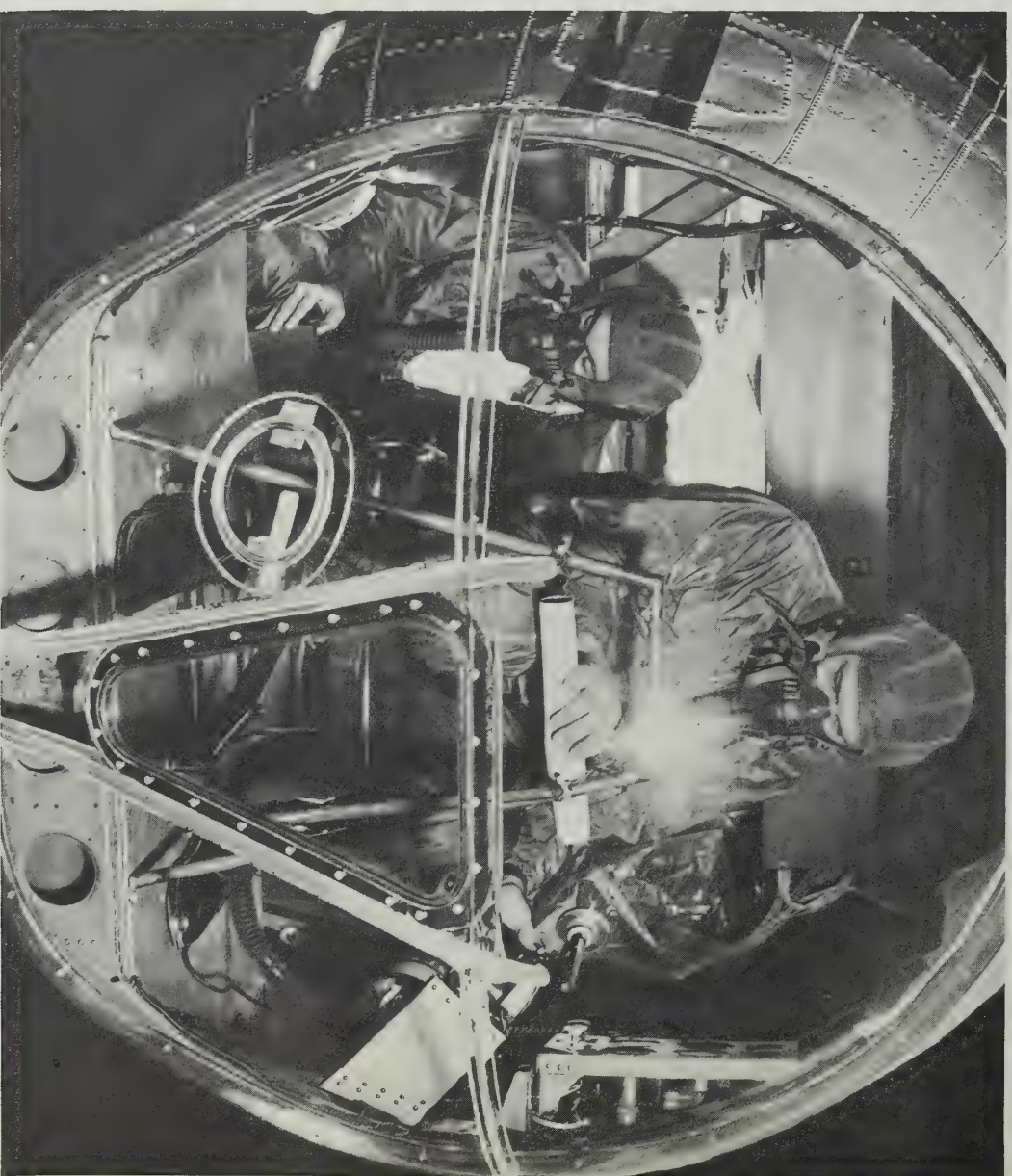
N-45635





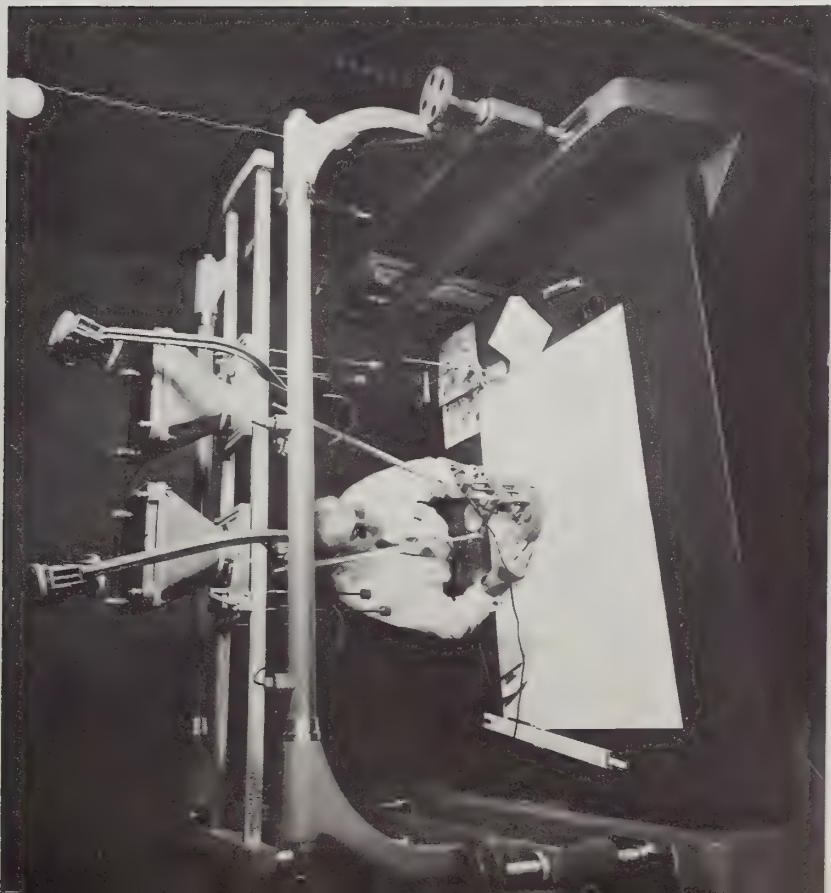
In soil-survey, soil-conservation, and watershed-protection work, aerial photos are used as a base for land-use and soil maps, which indicate soil conditions and types, the topography of an area, and how land can best be used.

In fighting forest fires, aerial photos provide ground crews with the latest facts about the fire area, such as the location and the condition of streams, roads, and trails, the extent and kind of fuel feeding a fire.



BN-17345-X

AERIAL PHOTOGRAPHY



left: These men are the photographic team in a converted B-17 used in mapping work. The man on the left operates an intervalometer, which controls the intervals at which photos are taken. Job of the man in the center is to see that the correct flight line is maintained. The camera is in the plane's bomb bay. Although much smaller planes are usually used in aerial photography for agricultural use, a ship such as this B-17 is needed for big jobs that call for picture-taking at high altitudes and speeds.



above left: A cartographer in USDA's Soil Conservation Service uses a stereoscopic plotting instrument and stereo pairs of photos to make up a contour map showing land elevations in 20-foot intervals.

above: An SCS conservationist plots soils information on an aerial photo for use by the farmer in developing a conservation plan for his land. This farm is in central Oregon.

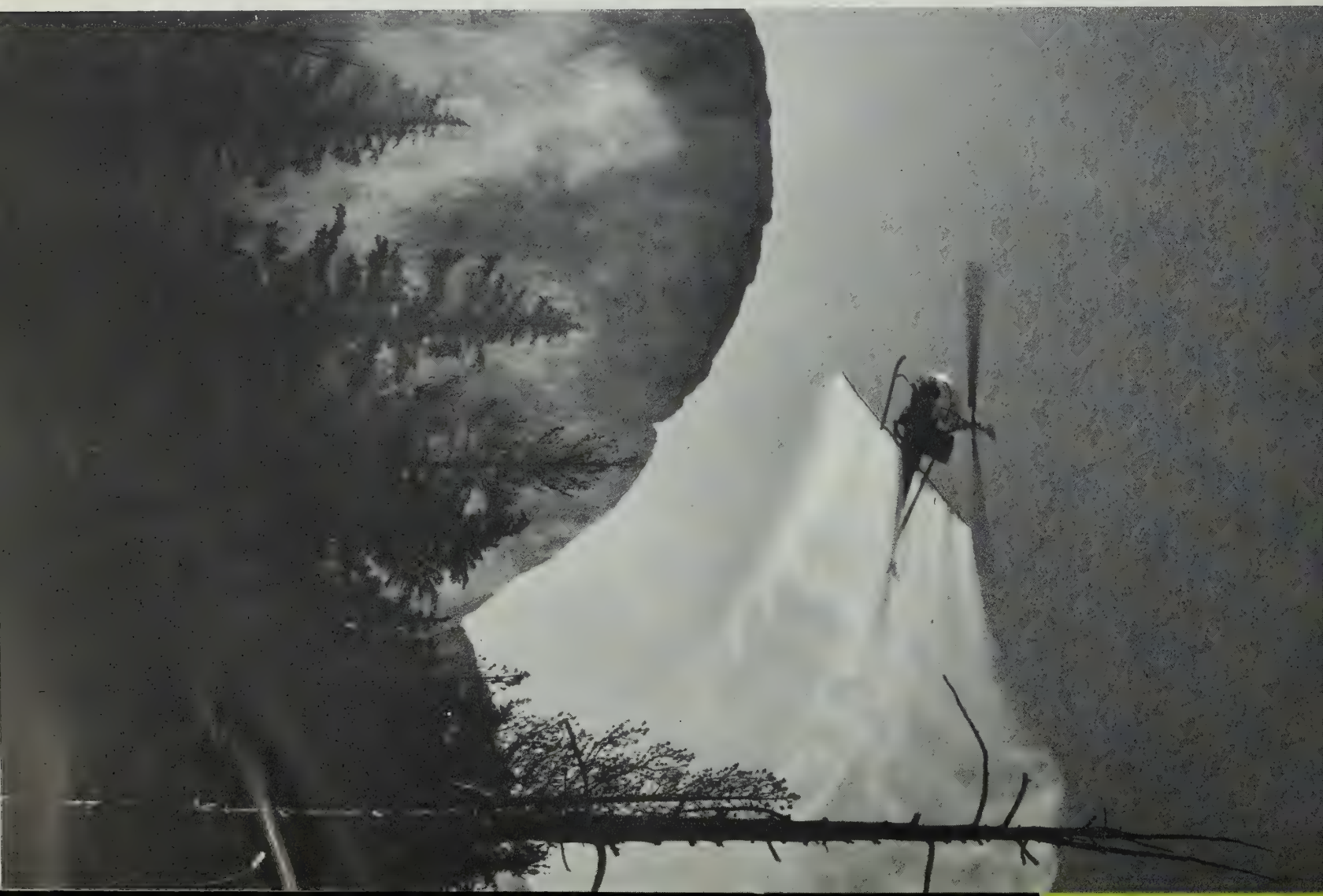
FORESTFIGHT

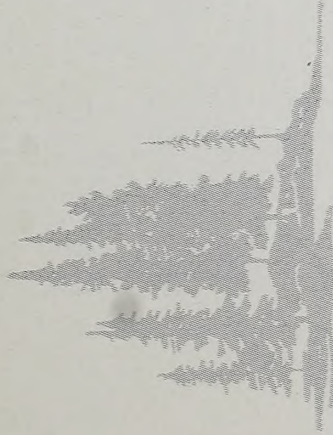
Let's say a bolt of lightning starts a small fire in a remote forest area high in the mountains and far from any road. Ground observers may not be able to spot the fire until it has a good start, and by the time the ground crews get to the site, the fire may have taken on major proportions. A plane or helicopter may not only see the fire while it's still easy to stop, but may be able to do just that by extinguishing it from the air.

In large-scale fires, aircraft have become almost as necessary as the pick and shovel. They carry men and equipment where they're needed most, keep the blaze under constant observation, and are indispensable in two of the most effective techniques of modern fire control: the use of smokejumpers and retardant chemicals.

In 1961, the U.S. Forest Service logged 16,000 hours of flight time with helicopters fighting fires. Forestry aircraft are handy in many other ways. They drop seeds over burned-out areas, stock lakes and streams, help in wildlife management, do photo work, conduct search and rescue operations.

right: *Skimming over California's High Sierras, a 'copter sprays insecticide to kill a moth called the needleminer, which is extremely destructive to trees. By studying the moth's life cycle, USDA entomologists determined when spraying would be most effective.*





FC-470936

Cascading water or chemicals from the air often provides invaluable help when coordinated with firefighting on the ground. This converted TBM torpedo bomber has just released 450 gallons of a chemical slurry.

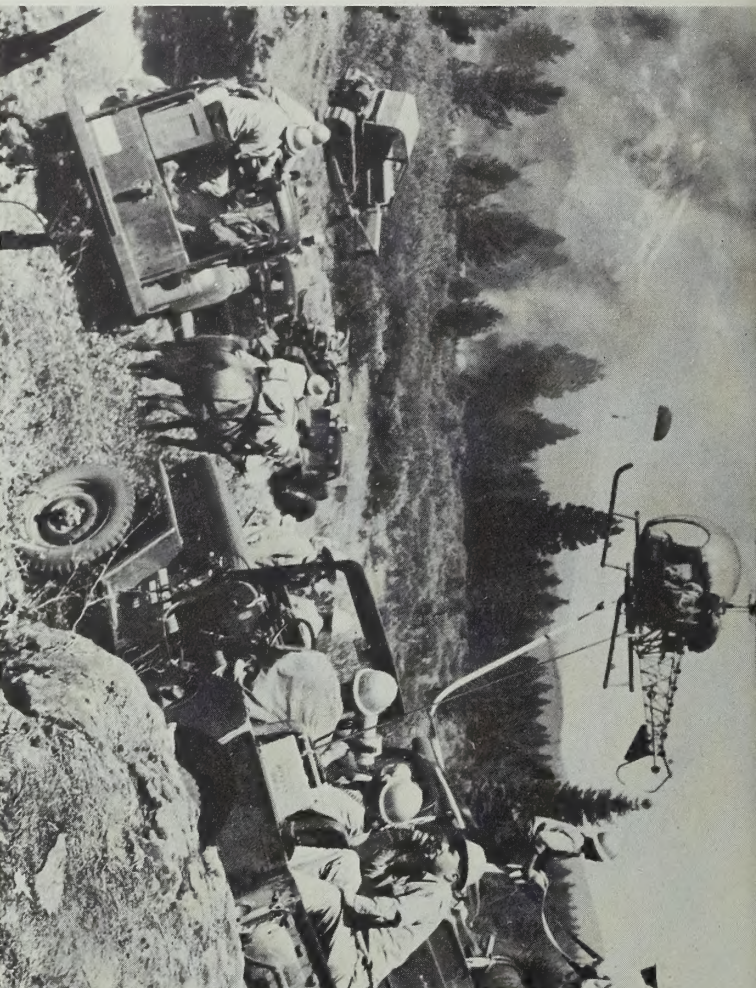
FC-490255



The airborne firefighters called smokejumpers owe their origin to the Forest Service, which began test jumps in 1939 and made the first actual fire jump the next year. Today, smokejumping is a major means of forest-fire control.



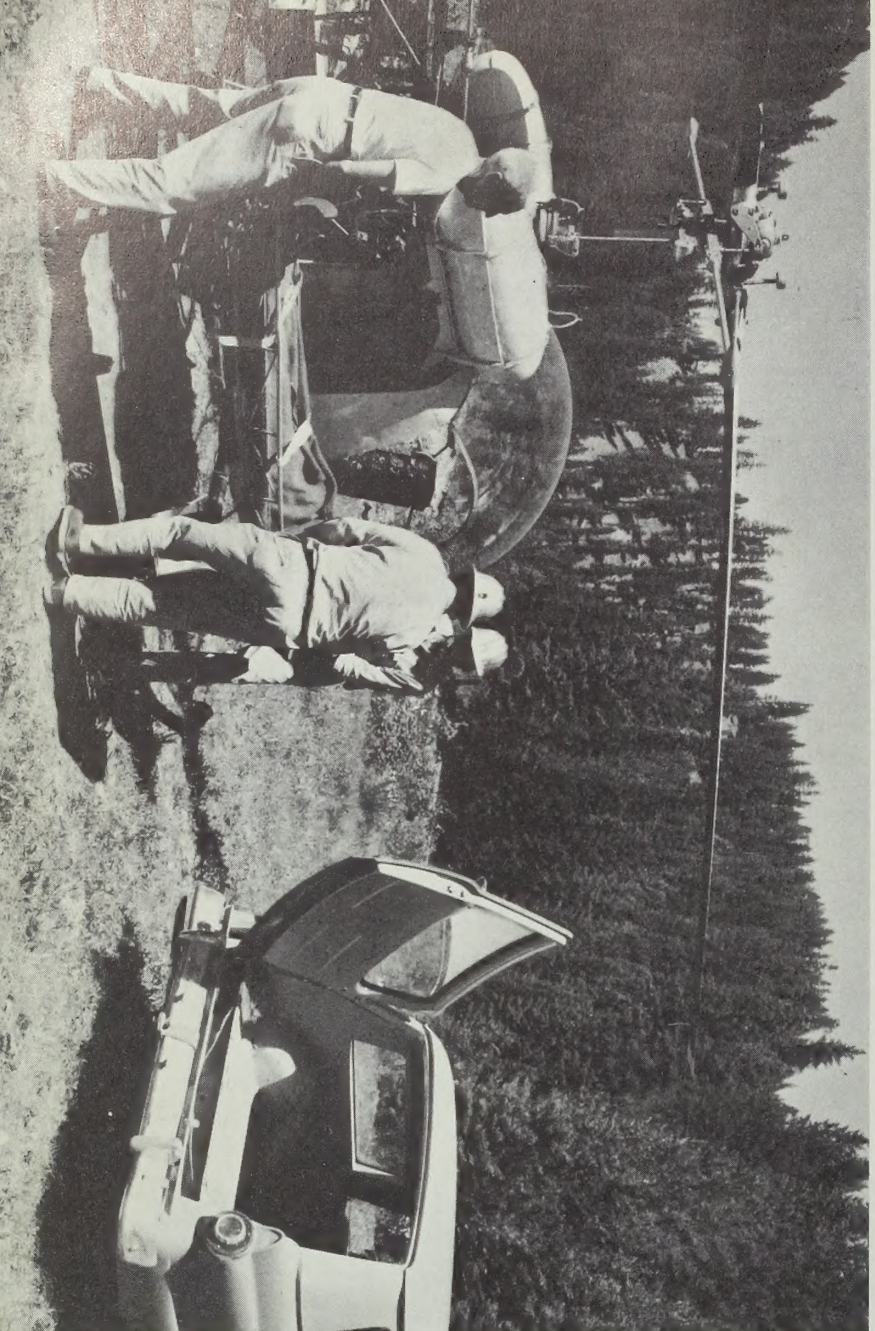
below: If necessary, a helicopter can easily serve as an ambulance, picking up firefighters in places land vehicles can never reach.



BN-17342-X

above: A whirlybird goes into action unreeling fire hose. Helicopters can also pay out hose from pre-packed trays—a timesaving method that's especially valuable in rough or mountainous terrain.

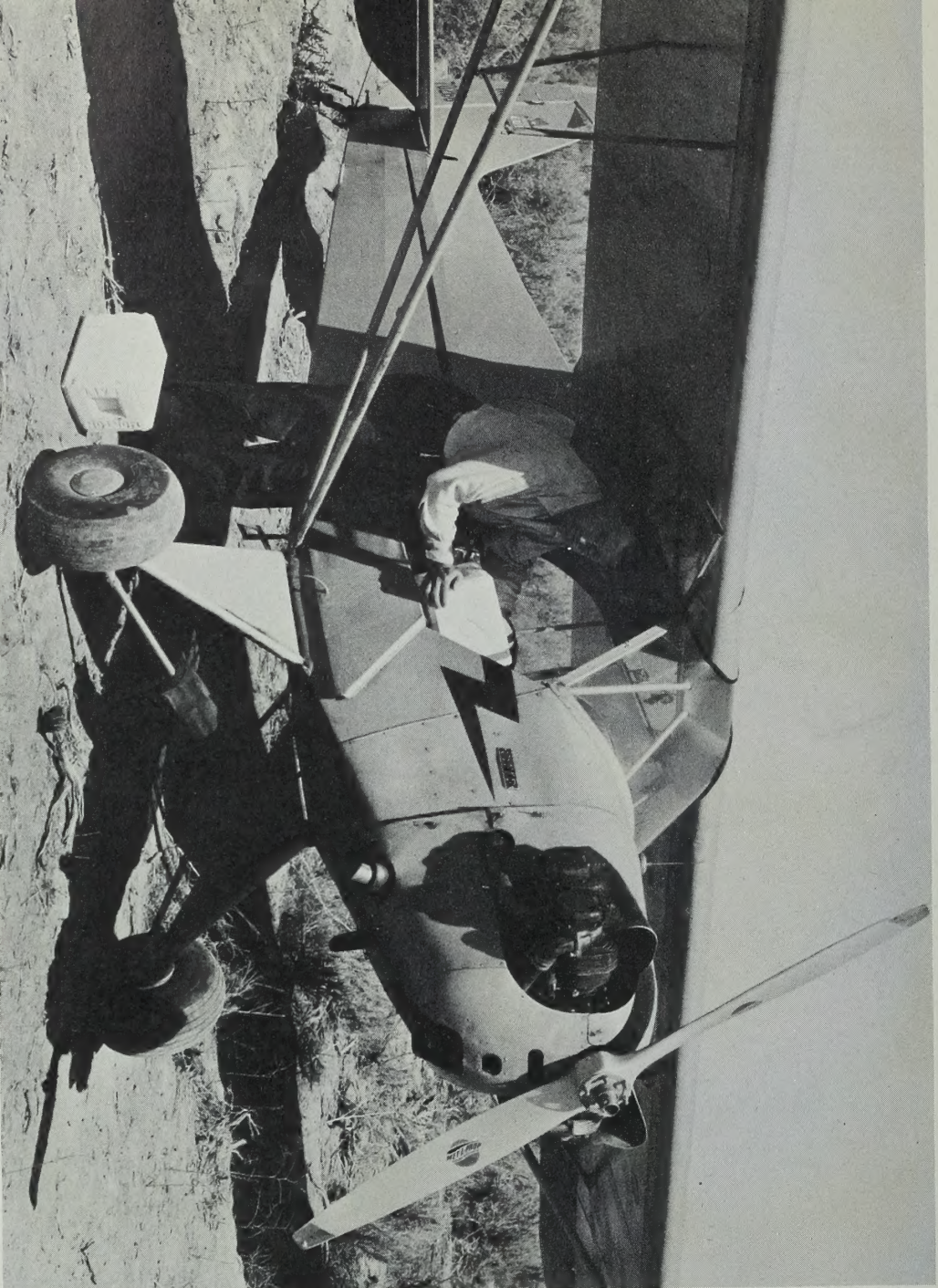
right: Helping to fight a big blaze in the Sierra National Forest, this Forest Service helicopter made water drops, shuttled firefighters and their equipment to hotspots.



FC-496537



BN-17340-X



A Nevada rancher loads his plane with blocks of salt, which he will air-drop to his cattle on the range.

Magazines and newspapers may borrow glossy prints of any of these photographs for editorial use free on a 30-day loan basis. They are available in any size up to 8 x 10 from the Photography Division, Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

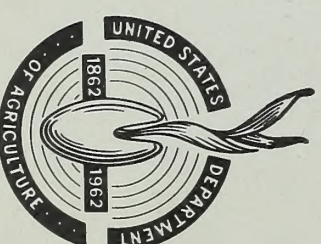
U. S. GOVERNMENT PRINTING OFFICE : 1962 OF-662494

Photographs collected by the Centennial Committee in commemoration of the 100th anniversary of the U.S. Department of Agriculture.

The photos are from the following sources:
Aeroservice Corp., American National Red Cross, Bell Helicopter Company, Grumman Aircraft Engineering Corp., Hiller Aircraft Corp., Piper Aircraft Corp., Shell Oil Company, Transland Aircraft, USDA.

Other booklets in the Centennial photo series:

- | | |
|-------------------------|--------|
| "Way Back When . . ." | No. 61 |
| "Kids and Country Life" | No. 63 |
| "Cracker Barrel Days" | No. 64 |



Growth Through Agricultural Progress